

July 27, '92.—Beetles are issuing in vivarium ten days after changing to pupæ.

July 30, '92.—The first beetles of this third generation are issuing out doors. On some of the trees which yet have leaves there are still a considerable number of larvæ in different stages of development.

Aug. 1, '92.—Considerable numbers of beetles have issued to date, both out doors and in vivarium. Larvæ of all stages are still crawling about on trunk and branches. Younger larvæ are still feeding on remaining leaves. Beetles are also feeding.

Aug. 3, '92.—Beetles are issuing in large numbers, and are migrating to the trees on which leaves are still present; none to be seen on defoliated trees. There are still numbers of larvæ in the last two stages on some of the trees. Pupæ and larvæ are piled up under some of the worst infested trees to the depth of about one inch.

FOURTH GENERATION OF BEETLES.

Aug. 3, '92.—Found to-day out doors five small batches of eggs, which will produce the third generation of larvæ, and are doubtless deposited by beetles of the third generation. None are deposited so far in the vivarium. Large numbers of the lower layers of pupæ are dead and have commenced to rot, evidently on account of the recent rains and excessive heat.

Aug. 5, '92.—Beetles are swarming in large numbers, the air is full of them. There are still numerous pupæ and larvæ ready to change. Numbers of larvæ are still feeding; most of them are about full grown. Eggs are still rather scarce. None have been deposited, so far, in the cages. There are now millions of beetles on the trees; the remaining leaves will, therefore, be soon consumed. Eggs are still scarce, though batches of them are scattered over the trees; there is scarcely a chance for larvæ of the third generation to develop. There are still thousands of pupæ and also some larvæ of the second generation. Eggs found August 3rd have already hatched.

Aug. 9, '92.—The majority of beetles have now issued. There are still a few larvæ. The denuded trees will soon have new leaves. Eggs are still scarce. Beetles in cages have commenced to deposit some eggs.

Aug. 11, '92.—Nearly all beetles have issued. There are still a few larvæ of second generation to be seen. Eggs (third generation) have become somewhat more numerous, especially on some young shoots, which are completely covered by the beetles. Leaves are appearing on some of the denuded trees.

ON DEMODEX FOLLICULORUM VAR. BOVIS IN AMERICAN CATTLE.—*

✓ BY C. W. STILES, PH. D., WASHINGTON, D. C.

In most books which treat of *D. folliculorum*, considerable space is given to a description of the lesions it produces in man, dogs, cats and sheep, while its presence on cattle is simply mentioned with the remark that Claus and Gros state that it is occasionally found on these animals.

Gros seems to be the first who observed it on cattle. His original article is not at my disposal, but I quote from Blanchard.

*See page 245.

Walter Faxon† added an interesting contribution to our knowledge on this subject, when he described some pits and pimples found in the skin of cattle and caused by the presence of the parasite in question. Faxon's paper seems to have remained unknown to most authors, while a few who have evidently seen it ignore it, with the remark that the description and figures are so poor that no confidence can be placed in it. Only a few authors have accepted his results.

While forced to admit that from a zoological standpoint Faxon's paper is not all that could be desired, I believe it should have received more attention than has been given to it, and I am now in position to support Faxon in his statements.

This past winter and spring Pfister and Vogel have sent to the Hon. Secretary Rusk several hides which were covered with "pimples" or pustules, and which, according to their letters, have been noticed occasionally in former years, but never in such alarming frequency as this year.

The hides were referred to me for examination, with the following result:—

They were dotted with numerous swellings about as large as a pea, and with numerous small punctures about the diameter of a pin.

Upon opening the swellings it was found that they contained a granular mass, which, owing to the preparation through which the hides had passed, was greatly changed histologically; besides the granular substance there were immense numbers of *D. folliculorum* var. *bovis*. The parasites were easily recognizable, but were too macerated to warrant my giving figures of them in this note. The punctures were evidently the entrances to hair-follicles, while the lumen of the pimples evidently represented enlarged hair-follicles, the enlargement being due to the immense numbers of the parasitic mites present.

Dr. Michener requested Messrs. Pfister and Vogel to inform us in regard to the frequency of these pimples in hides which came through their hands, and received the following reply:—

"Milwaukee, Wis., April 28, 1892.

"Dr. C. B. Michener, Asst. Chief, Bureau of Animal Industry, Washington, D. C.:

"DEAR SIR,—Yours of the 22nd inst. received, and we are very thankful for the information you have furnished us. We have had such a variety of opinions on just what

†On the Presence of *Demodex folliculorum* in the skin of the Ox: Bulletin of the Museum of Comp. Zool. of Harvard College, Cambridge, Mass., 1878. Vol. 5, No. 2, p. 11-16. 1 Pl. with 9 figs.

was the cause of these troubles that the result of your researches is very gratifying to us, as we were in the dark whether the cause was not some fault of ours in the manufacture of the leather. You asked at what time of the year this trouble appears. We have noticed it at all seasons, but had a remarkably large percentage of it in the hides received during the months of September, October, November and December of last year.

"We have found it in hides that were bought in St. Paul, Chicago, Kansas City, but think we noticed it more in hides from the southern districts. The damage to the hide is a severe one, being fully 20 per cent. Taking 50 pounds as the average weight of country hides it would amount to 50 cents per head, which, of course, in the aggregate is an immense loss to the tanning interest.

"Yours very respectfully,

"(Signed) PFISTER & VOGEL LEATHER CO.,

"Per Fred Vogel, Jr., Mngr."

It will be seen from this letter that this parasite occurs on cattle much more frequently than has hitherto been supposed.

It would of course be extremely difficult to treat a herd of cattle affected with this parasite. Several authors recommended the same treatment for cattle which is used in cases where dogs are affected with the same parasite. Prevention, however, can effect a great deal, and as soon as the mites are noticed on an animal, the latter should immediately be isolated from the herd.

Bureau of Animal Industry, Washington, D. C.,

July 1, 1892.

Postscript.—Prof. Riley in personal conversation with me suggested the use of kerosene emulsion to destroy these parasites. The emulsion is certainly worth trying, but I must confess I have not much confidence that it will prove as effectual against these mites as it has against other arthropod parasites. Experience has shown that nothing short of a thorough rubbing in of whatever is used (benzine, carbonate of potash, green soap and all the rest of the remedies recommended in various books) will destroy the hair-follicle mite.

In the discussion which followed the presentation of the paper before the Entomological Club, the other varieties of *Demodex* were mentioned, and at the request of several members of the Club I append below the measurements (in mm.) of the varieties in question [compiled from Méguin, Railliet, Neumann, Zürn].

1. *D. f. var. hominis*.

<i>Female</i> : length.....	0.40
rostrum.....	0.02 long, base 0.03 broad.
thorax.. ..	0.09 by 0.04

- Male*: length 0.30
 rostrum, same as in female.
 thorax..... 0.085 by 0.04
First larva (apode):..... 0.06 by 0.04
Second larva (apode)..... 0.08 by 0.06
Hexapode larva:..... 0.12 by 0.05
Octopode larva: 0.36 long.
Ovum:..... 0.06-0.08 by 0.04-0.05
 rostrum + cephalothorax=one-third to one-fourth of the total
 length of the body.
2. *D. f. var. canis*.
Female: length..... 0.25-0.30
 rostrum..... 0.03 long, base 0.03 broad.
 thorax..... 0.10 by 0.045
Male: length 0.22-0.25
 rostrum same as in female.
 thorax 0.095 by 0.045
First larva (apode):..... 0.06-0.09 by 0.015-0.025
Hexapode larva: 0.11 by 0.032
Octopode nymph: 0.19 by 0.04
Ovum:..... 0.07-0.09 by 0.025
 rostrum + cephalothorax=slightly less than one-half of the total
 length of the body.
3. *D. f. var. cati*:
 Similar to var. *canis*, but one-fourth smaller.
4. *D. f. var. caprae*.
Female:..... 0.23-0.25 by 0.06-0.065
Male: 0.22-0.23 by 0.05-0.055
Ovum:..... 0.068-0.08 by 0.032-0.045
 rostrum + cephalothorax=nearly one-half of the total length.
 Causes a disease in goats similar to that described above in cattle
 (Nocard, Railliet).
5. *D. f. var. ovis*.
 Said to differ from var. *hominis* in having a broader rostrum and
 cephalothorax (Oschatz).
6. *D. f. var. equi*.
 E. Wilson says it is identical with var. *hominis*.
7. *D. f. var. bovis*.
 length..... 0.2

The material in my possession at present does not warrant my giving exact measurements. Faxon's figures show that the abdomen is shorter and broader than that of var. *hominis*, and slightly less than two-thirds of the entire length. The form is more like that of var. *canis*, and I should not be at all surprised if a study of fresh material would result in the conclusion that var. *bovis* is simply a diminutive form of var. *canis*, and that the cattle originally became infected from contact with dogs. This is, however, mere speculation.

8. *D. f.* var. *suis* = *D. phylloides*, Csokor, 1878.

Female : 0.24-0.26 by 0.06-0.066

Male : 0.22 by 0.05-0.057

Hexapode larva : 0.13-0.14 long.

Octopode larva : 0.22-0.28 long.

Ovum : 0.10-0.11 by 0.034

rostrum + cephalothorax = about one-half the length of the body.

As I stated in the discussion, in answer to a question, this form is totally different from var. *bovis*, having an extremely pointed abdomen. It is so different, in fact, that Csokor described it as a new species; most authors admit it only as a variety. Personally, however, I rather incline towards Csokor's opinion.

NOTES ON THE BEAN WEEVIL.*

Professor Riley gave some verbal notes on the above subject, covering substantially the facts in articles recently published in the *Canadian Entomologist*, and an editorial prepared for the first number of Volume V., *Insect Life*.† Both the Bean Weevil and the Pea Weevil were found to have temporary thoracic legs of a peculiar form in the post-embryonic larval state, and also certain prominent spines on the prothoracic shield. The eggs of the Bean Weevil in the field are not attached to the outside of the pod, as had hitherto been stated and believed, but are laid in masses within the pod, through an aperture made by the jaws. In the green pods this aperture must frequently close up, so as not to be noticeable, as pods which were brought in from the field showing

*See page 255.

†Canadian Entomologist, August, 1892, Vol. XXIV., No. 7, p. 185.
Insect Life, Vol. V., No. 1, p. 27.